Newsletter on Computational and Applied Mathematics

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Aims and scope :
The CAM-newsletter is a newsletter intended for numerical analysts and applied mathematicians. Topics included are book reviews, announcements and reports of conferences outside the U.S.A., titles of institutional reports and available numerical software.
The contact persons will collect and pass the announcements of events taking place in their country. Institutions interested to insert in the newsletter the titles of their recent reports are kindly invited to send such information to the editors. Authors who are willing to distribute their numerical software for research purposes may use the column "available software". They should send a note to the editors containing a brief description of their programs and practical information for a potential user. Also bibliographies on special purpose software may be published in this column.

Contributions to the next issue should be sent to the editors before September 10.

1. BOOK REVIEWS

SVD and signal processing II. Algorithms, analysis and applications,
R. Vaccaro (Ed.)
Elsevier, amsterdam, 1991, xv+512 pages. Hard cover, Dfl 220.00.

The first International Workshop on *SVD and signal processing* was held in France in 1987 and its proceedings were edited by E. Deprettere and published by Elsevier in 1988.
Inspired by its success, a second Workshop was organized at the University of Rhode Island in 1990. The present book contains its proceedings. This explains the 'II' in the title.

The singular value decomposition (SVD) is over 100 years old. Since the late 1970's it has been intensively applied in signal processing problems. SVD performs extremely well under difficult conditions, i.e. when the data are strongly corrupted by noise, and SVD has also an appealing geometric interpretation. However, it does not solve all the problems. Its drawbacks are its computational complexity (expensive in comparison with e.g. fast Fourier transforms), the difficulty to make it recursive or adaptive (important in real time applications with a permanent inflow of data) and finally it is a nonlinear transformation of the data, which makes its analysis less tractable. Some of these problems are bordered in the papers of this book.
The overlap of (numerical) linear algebra and (practical) signal processing is a fertile soil for the offspring of new ideas, algorithms and implementations. The development of new machine architectures (the roots of systolic arrays have drawn something from this soil too) gives yet another extra impetus to the research in this area. Also this can be observed in this book.

It is divided into 5 parts. Part I contains 5 papers which deal with fundamental properties of SVD and a whole class of generalized SVD's. Also its computation on parallel architectures and with neural networks is discussed as well as some perturbation theory of SVD. Part II consists of 9 papers dealing with a variety of algorithms related to SVD computation on different architectures. The performance of SVD based algorithms is discussed in the 5 papers of part III. The last two parts show a wide spectrum of applications of SVD techniques inside and outside the area of signal modeling and detection.

The book gives an interesting and up-to-date cross-cut of current research and state-of-the-art of an intriguing field where practical mathematics are at work. For those who enjoyed G. Golub and P. Van Dooren (eds.) *Numerical linear algebra, digital signal processing and parallel algorithms* Springer-Verlag, Berlin, 1991, (a volume in the NATO-ASI series) the current book will also be of interest.

A. Bultheel

Handbook of Numerical Analysis, Volume II
(Finite Element Methods - part 1)
P.G. Ciarlet and J.L. Lions (eds.)
North-Holland, Elsevier Science Publishers, Amsterdam and Elsevier Science Publishing Co. Inc., New York, 1991, ix+928 pages, Dfl 275.00/US $ 110.00, ISBN 0-444-70365-9.

The concept of this handbook has been given in our review of volume I (see CAM Newsletter vol. 6 no. 3, 1990 in J. CAM vol. 32 (1,2)). This is volume II in this project. It is completely devoted to finite element methods.

Finite element methods are certainly among the major achievements in numerical mathematics of the last two decades. The birth of the theory can be traced back to the 1960's, but the sound mathematical foundation and the first successes are from the end of that decade and early seventies. A short, but interesting survey of the history and the roots of the theory written by J.T. Oden forms the opening article of this volume (14 pages).

The next article by P.G. Ciarlet discusses the basic theory for linear elliptic problems of second and fourth order (elasticity problems). It is the larger article of this volume (336 pages). It is an extension of the relevant chapters from the author's book: *Finite element methods for elliptic problems* (North-Holland, 1978). The reference list of 546 items forms a fairly complete bibliography on the subject. The analysis of this article is restricted to the global theory.

The local theory of interior behavior is the subject of the next article by L.B. Wahlbin (170 pages). It discusses questions like: if singularities are not resolved, what effect have these errors on the approximation in the "smooth region" and how can adequate mesh refinements be obtained and why is convergence in certain points better than expected (so called superconvergence).

The article by J.E. Roberts and J.-M. Thomas discusses mixed and hybrid methods (118 pages). These terms originate from structural mechanics, but the methods are

applicable in many other fields. The methods are found as relaxations of equilibrium methods based on variational principles which are difficult to solve.

The use of finite element methods in eigenvalue problems is the subject of the article by I. Babuska and J. Osborn (148 pages). The authors start from several engineering boundary value problems, but the objective is to present the basic ideas rather than the details of the computations. After the theory is presented, they return to several applications.

In the final article by H. Fujita and T. Suzuki, the authors discuss evolution equations (138 pages). While the first articles were devoted to elliptic equations, this article concentrates on parabolic and hyperbolic initial value problems. The methods rely on semigroup theory and operator theoretic techniques.

This collection of articles forms an excellent introduction to finite element methods. A novice to the subject will problably drown in the vast literature. This book, though rather voluminous is currently the most up-to-date guide to the available results. Some topics treated in this book may not have reached the status of a polished finished entity. The risk is real that certain articles will be rewritten during the next decades, but in 1991 this book is still the most complete introduction to the more advanced literature you will find.

A. Bultheel

2. ANNOUNCEMENTS OF CONFERENCES

SERC Conference
The MATHEMATICS of NONLINEAR SYSTEMS

Date : 1-5 July, 1991.

Location : University of Bath, United Kingdom.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
Professor J.F. Toland
School of Mathematical Sciences
Unversity of Bath
Claverton Down
Bath BA2 7AY, United Kingdom
Telex: 449097 UOBATH G
Fax: 0225-826492
Tel.: 0225-826188 direct line
Electronic mail: jft@uk.ac.bath.maths

International Conference on Complex Systems:
FRACTALS, SPIN GLASSES and
NEURAL NETWORKS

Date : 2-6 July, 1991.

Location : Miramare - Trieste, Italy.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
International Conference on Complex Systems
I.C.T.P., P.O. Box 586
I-34100 Trieste, Italy
Tel.: (40) 224241
Cable: CENTRATOM
Telex: 460449 APHI
Fax: (40) 224531

NATO Advanced Research Workshop on
Approximation by Solutions of
Partial Differential Equations,
Quadrature Formulae, and Related Topics

Date : 8-12 July, 1991.

Location : Hantsholm, Denmark.

Organizer : Prof. Myron Goldstein.

Contact address :
Professor Myron Goldstein
5914 South Newberry Road
Tempe, Arizona 85287, U.S.A.
Tel.: 602-820-4906

CTAC 91
Computational Techniques and
Applications Conference

Date : 15-17 July, 1991.

Location : Adelaide, South Australia.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
Len Colgan
School of Mathematics and Computer Studies
S.A. Institute of Technology
The Levels, S.A. 5095, AUSTRALIA
Tel.: 08 343 3038
Fax: 08 349 4367
Email: malhc@sait.edu.au

5th IFAC/IMACS Symposium
COMPUTER AIDED DESIGN in
CONTROL SYSTEMS

Date : 15-17 July, 1991.

Location : Swansea, U.K.

Other information : CAM-Newsletter 6, nr. 2.

Conference language : English.

Contact address :
Mrs. F.M. McEwen
Dept. of Electrical and Electronic Engineering
University College of Swansea
Singleton Park, Swansea, SA2 8PP U.K.
Tel: 0792-295475
Fax: 0792-295532
Telex: 48149 UICS G
email: eemcewen@uk.ac.swan.pyr

13th IMACS World Congress on
Computation and
Applied Mathematics

Date : 22-26 July, 1991.

Location : Trinity College, Dublin, Ireland.

Other information : CAM-Newsletter 6, nr. 1.

Contact address :
Paulene McKeever
IMACS'91
40 Millview Lawns, Malahide
Co Dublin, IRELAND
Tel.: (+353-1) 452081 or 797655
Fax: (+353-1) 802523
Telex: 30547 SCHN EI

Short Conference on
UNIFORM MATHEMATICS and
APPLICATIONS

Date : 14-16 August, 1991.

Location : Bern, Switzerland.

Other iformation : CAM-Newsletter 7, nr. 1.

Contact address :
Markus Sprenger
Short Conference on Uniform Mathematics
Department of Mathematics, Univer. of Bern
Sidlerstrasse 5, CH-3012 Bern, Switzerland

Colloquium on
DIFFERENTIAL EQUATIONS and APPLICATIONS

Date : 21-24 August, 1991.

Location : Budapest, Hungary.

Organizers :
János Bolyai Mathematical Society
Loránd Eötvs University
Budapest University of Technology.

Invited speakers :
H. Berestycki (France), J. Bemelmans (Germany), A. Friedman (U.S.A.), V. Hutson (GB), M.I. Vishik (SU), W. Ziemen (U.S.A.).

Other information :
— Proceedings will be published in the series "Colloquia Mathematica Societatis J. Bolyai" (a joint edition with the North-Holland Publishing Co.)
— The registration fee for participants is 80 U.S.D. Accomodation will be provided in the Student Hostel of the Budapest Un. of Technology.

Conference language : English.

Contact address :
L. Simon
J. Bolyai Mathematical Society, Anker Köz 1-3
H-1061 Budapest, Hungary.

EQUADIFF-91

This is the current edition of the West European Equadiff series (Marseille 1970, Brussels 1973, Florence 1978, Würzburg 1982, Xanthi 1987) on ordinary differential equations, partial differential equations, their numerical treatment and related topics.

Date : 26-31 August, 1991.

Location : Barcelona, Spain.

Invited speakers :
L. Arnold, J. Ball, H. Broer, A. Delshams, L. Demkowickz, F. Dumortier, W. Eckhaus, E. Fernández Cara, B. Fiedler, G. Fusco, M. Golubitsky, K.P. Hadeler, J.K. Hale, W. Jäger, J. Kacur, O.A. Ladyzhenskaja, V.F. Lazutkin, J. Llibre, X. Mora, K. Morgan, K.W. Morton, A.J. Neischtadt, M. Polácik, P.A. Raviart, J.M. Sanz-Sema, V.A. Solonnikov, F. Takens, J.L. Vázquez, J.R. Whiteman, Ye Yanqian.

Other information :
— The conference fee is 10.000 Ptes. (110 dollars currently)
— The conference will be held in the Zona Universitària of the City of Barcelona, at the Diagonal avenue, and lodging (full board) is available at the "Col.legi Major Sant Raimon de Penyafort" Diagonal, 643, Barcelona, a students residence, at a price of approximately 5.000 Ptes./day.

Contact address :
Prof. C. Perelló, Equadiff-91
Departamenta de Matemàtiques, Edifici C
Universitat Autònoma de Barcelona
08193, Bellaterra (Barcelona), Spain
Fax: 34-3-5812003 Tel.: 34-3-5811304
E-mail: D3MACSTO at EBOUBO11.BITNET

ECMI 91
APPLICATION of MATHEMATICS to
INDUSTRIAL PROBLEMS

This is the Sixt Annual Conference of the European Consortium for Mathematics in Industry.

Date : 27-31 August, 1991.

Location : University of Limerick, Ireland.

Invited speakers :

Prof. M. Carroll (Houston, USA): Mathematical approaches in energy and environmental systems
Prof. G.H. Cottet (Grenoble, France): Particles, partial differential equations and fluids
Prof. M. Deistler (Vienna, Austria): Survey on system identification including application to load forecasting
Mr. D. Gelder (Pilkington, Ormskirk, England): Instabilities in roller conveyors used in flat glass manufacture
Dr. A. Gilg (Siemens, Munich, Germany): On numerical simulation in the micro-electronics industry
Prof. A. Newell (Arizona, USA): Turbulence in fluids and in optics
Prof. J. Sarvas (Helsinki, Finland): Numerical computation of electromagnetic fields
Dr. H. Urbach (Philips, Eindhoven, Netherlands): Nonlinear hyperbolic systems in liquid chromatography.

Other information :

— Special sessions composed of a number of papers on a particular theme related to the conference will also be included in the programme. The following have already agreed to organize such mini-symposia: Prof. Bock, Augsburg, Germany "Industrial applications of control", Prof. A.A. Samarskii, Moscow, USSR "Modelling problems at the National Centre of Mathematical Modelling, Moscow"
— Papers that are accepted for the conference (including papers presented in the minisymposia) will be refereed and thus have the opportunity of being included in the conference proceedings to be published by Kluwer Academic Publishers, Netherlands
— Registration fee: Irish pounds 150 (115 for ECMI members).

Conference language : English.

Contact address :

Secretariat (ECMI 91)
Department of Mathematics, Univ. of Limerick
Plassey Technological Park, Limerick
Republic of Ireland
Tel.: +353-61-333644 Ext: 2207
Fax: +353-61-330316
EMail: ECMI91@UL.IE

PARALLEL COMPUTING 91

Date : 3-6 September, 1991.

Location : London, United Kingdom.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :

Parallel Computing 91
Attn. Mrs. L. Vrielink
P.O. Box 7920
5605 SH Eindhoven, The Netherlands
Phone: NL - (0)40-785255
Fax: NL - (0)40-735940 or 785440
Telex: 35000 phtc nl/XLPEBFC

PARALLEL COMPUTATION

Date : 18-20 September, 1991.

Location : Oxford, United Kingdom.

Sponsor :

IMA :The Institute of Mathematics and its Applications.

Topics :

Keynote speakers will lead sessions on Software and Hardware Overviews, Tools, Algorithms, Architectures, and Applications. The emphasis of the conference is on the application of parallel computing to practical problems. Recent developments and future directions in parallel computation will be covered. Panel and poster sessions provide oppurtunities for discussing ideas generated by the presentations.

The provisional programme includes the following speakers and subjects:

Architectural Overview of Developments in Parallel Architectures and Future Prospects by P. Messina (USA)
Architectural Overview for General Purpose Parallel Computers by D. May (UK)
Overview of Available Software and its Performance by J. Dongarra (USA)
Development of Numerical Software Libraries for Vector and Parallel Machines by S. Hammarling

(AFIMA, UK)
Algorithmic and Languages Issues for General Purpose Parallel Machines by W. McColl (UK)
Tools for Parallel Computing by W. Jalby (France)
Exploitation of Parallelism in Direct and Semi-Direct Solution of Large Sparse System by I. Duff (FIMA, UK)
Large Sparse Systems: Iterative Methods by H. van der Vorst (The Netherlands)
Some Challenges in Parallel Methods for Optimization Problems by R. Schnabel (USA)
LP and Mixed Integer Programming Algorithms and Software by U. Suhl (Germany)
Evolution of Algorithms for Parallel Computation in Dense Linear Algebra by J. Du Croz (UK)
Parallel Iterative Solution of Sparse Linear Systems on a Transputer Network by R. Bisseling (The Netherlands)
Scientific Applications and Parallel Computing by A. Hey (UK)
Lattice Gas Techniques for PDE's by G. Doolen (USA)
PDE Solution on Highly Parallel Computers by O. McBryan (USA)
The Need for Parallelism in Engineering Applications by M. Brady (UK).

Other information :
— Conference fee: Pound 157 (IMA-members), Pound 188 (non members)
Residential fee : Pound 153
— It is intended that the proceedings of this conference will be published by Oxford University Press
— A one-day tutorial workshop "An introduction to parallel computing for numerical applications", will be organized at the Oxford University on the 17th September.
The objectives are
1. To provide an overview introduction to current practical hardware, software environments and some basic tools available to assist in parallelisation
2. To discuss how numerical algorithms, relevant to the solution of pde's and ode's can be mapped onto parallel architectures
3. To describe some experiences of mapping large scale numerical codes onto transputers and i860 based systems.
— The tutorial fee is Pound 148 (Pound 168) for IMA (non)-members.

Contact address :
Miss Pamela Irving
Conference Officer, The IMA
16 Nelson Street, Southend-on-Sea, Essex SS1 1EF
Tel.: 0702 354020
Fax: 0702 354111

SSOPAS
7th Spanish Symposium on Orthogonal Polynomials and their Applications

Date : 23-27 September, 1991.

Location : Granada, Spain.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
VII Simposium Sobre Polinomios
Ortogonales Y Appliciones
Dpto. de Fisica Moderna
Facultad de Ciencias, Univ. de Granada
Avda. Fuentenueva s/n, 18071-Granada, Spain
Tel.: 34-58-243217
Fax: 34-58-274258
E-mail: ANGULO@UGR.ES; DEHESA@UGR.ES

SCAN-1991
International Symposium on Computer Arithmetic and Scientific Computation

Date : 1-4 October, 1991.

Location : Oldenburg, Germany.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
Prof. Dr. J. Herzberger
Fachbereich Mathematik
Universität Oldenburg
W-2900 Oldenburg, Germany

Eurographics Workshop on
COMPUTER GRAPHICS and MATHEMATICS

Date : 28-31 October, 1991.

Location : Genova, Italy.

Organizer :
I.M.A. (Institute for Applied Mathematics) of the C.N.R. for Eurographics.

Aims :
— to provide a forum for the exchange of research results in the application of mathematics to Computer Graphics, i.e., a technology transfer
— to encourage mathematicians to attack computer graphics problems, and
— to promote the use of all relevant mathematical techniques and methods in computer graphics.
— A secondary aim is to discover the basic mathematical tools every computer graphics expert should have.

Topics :
- **Techniques from Geometry**
  Projective Geometry
  Computational Geometry
  Differential Geometry
  Fractal Geometry
- **Probability**
  Stochastic Functions
  Monte-Carlo Methods
  Chaos Theory
- **Techniques from Topology**
  Topological Modelling
  Non-Manifold Modelling
- **Logic and Reasoning**
  Theorem Proving
  Symbolic Reasoning
- **Analytical and Algebraic Tools**
  Algebraic Geometry
  Complex Analytical Tools
  Quaternions

Other information :
* The workshop is limited to about 50 participants (35 papers)
* The fee will be about 630.000 Liras.

Contact address :
Bianco Falcidieno, Istituto per la Matematica Applicata
Via L.B. Alberti 4, 16132 Genova, Italy
Tel.: + 39 10 - 517639 Fax: + 39 10 - 517801
Email: FALCIDIENO@IMAGE.GE.CNR.IT

Fourth Conference on
THEORETICAL and APPLIED MECHANICS

Date : 5-7 November, 1991.

Location : Cairo, Egypt.

Other information : CAM-Newsletter 6, nr. 3.

Contact address :
Dr. Mahmoud R. Farweez
Academy of Scientific Research and Technology
Scientific Societies and International, Unions Dept.
101 Kasr-al-Aini Street, Cairo - Egypt.

EUROPEAN SIMULATION SYMPOSIUM

Date : 6-8 November, 1991.

Location : Ghent, Belgium.

Scope :
Continuing upon the succes of last year's conference, the ESS 91 is composed of two parallel symposia around problem investigation using simulation as methodology. On the one hand, simulation in the design and scheduling of intelligent process control systems is focused, while on the other hand, simulation support to study water resources systems and global changes will be discussed.

Contact address :
SCS International
c/o Philippe Geril, European Simulation Office
Coupure Links 653, B-9000 Ghent, Belgium.

International Congress on
EXTRAPOLATION and
RATIONAL APPROXIMATION

Date : 13-17 January, 1992.

Location : Tenerife, Canary Islands, Spain.

Other information : CAM-Newsletter 7, nr. 1.

Contact address :
P. González-Vera (E.R.A.)
Departamento de Análisis Matemático
Universidad de La Laguna
38271 La Laguna, Spain.

10th International Conference on
COMPUTING METHODS IN
APPLIED SCIENCES and ENGINEERING

Numerical simulation has become undoubtedly the third pillar of the scientifical and technological research; indeed, instead of competiting with the other two pillars, namely the analytical and experimental methodologies, it has become a necesary complement of them.
To reach its objectives, numerical simulation relies on the methods and techniques from scientific computing, on specialized softwares and on dedicated computers. These last years have seen important, if not revolutionary, developments in the above domains, parallel computing being a striking example.
The main objective of this Conference is to present the most advanced methods of scientific computing including the software and hardware aspects.
The organizers will carefully keep a balance between theory and applications, in order to provide new results and new tools for the academic and engineering participants.
Experts of international reputation will be invited and the program of the Conference will include contributed lectures in order to widen the active participation of the international scientific community.

Date : 11-14 February, 1992.

Location : Paris, France.

Organizer : INRIA.

Topics :
— Basic Numerical Methodology
— Parallel Computing
— Quantum Chemistry
— Combustion
— Domain Decomposition
— Maxwell Equations
— Hypersonic Flows
— Solid and Structural Mechanics
— Optimization and Control
— Turbulence
— Computational Physics and Chemistry
— Computer and Software Environments of Scientific Computing.

Conference languages : French - English.

Contact address :
INRIA - Rocquencourt
Relations Extérieures
Bureau des Colloques
Domaine de Voluceau BP 105
78153 Le Chesnay Cedex
France

COMPUTER SYSTEMS
and SOFTWARE ENGINEERING

Date : 4-8 May, 1992.

Location : The Hague, The Netherlands.

Sponsor : IEEE.

Features :
* Keynote addresses on main themes:
  — Computers and Optimization
  — Parallel Processing
  — Computational Algebra
* State of the Art Lectures by prominent scientists and engineers

* Invited and Regular Papers
* Student Paper Contest
* Tutorials on five main topics
* Technical Exhibition. Visits

Tutorials :

1. Parallel Computing and Neural Nets
2. Artificial Intelligence
3. Computational Algebra
4. Languages and Specification
5. Optimization and Programming.

Topics :

In addition to the main themes of the conference (Computers and Optimization, Parallel Processing and Computational Algebra), a further non-exhaustive list of topics is:

Optimization Techniques, Compiler Design and Optimization, Scheduling, Partitioning, Clustering, Algorithms and Complexity, Computational Logic, Parallel Algorithms, Signal Processors, Architectural Design Techniques, Computer Aided Design, Networks and Communication, Optimal Routing, Neural Networks, Mathematical Programming, Medical Computing, Database Architectures, Optimal Control, Operations Research, Hardware and Complexity, Functional Languages, Systolic Arrays, Knowledge-based Systems, Simulation of Large Scale Systems, Silicon Compilation, Computer Graphics, Special Processors, Computers for Consumer Products, Data Security, Genetic Algorithms, Standards.

Other information :

* Authors are invited to submit papers and/or posters on any of the conference topics.

  Prospective authors of papers should submit five clear and stapled copies of their contribution (not longer than twelve double spaced A4 pages) to P. Dewilde before October 1st, 1991.

  Accepted contributions will appear in the Conference Proceedings, which will be published by the IEEE Computer Society Press.
* Participants are invited to propose a program for special session(s). The proposal should be addressed to the Program Committee Chairman before Nov. 1st, 1991 and contain name, address and fax number of the organizer, title and name of session chairperson and a list of at most four contributions.

Conference language : English.

Contact address :

IEEE CompEuro 92
Prof. P. Dewilde
Delft University of Technology
Dept. of EE
POB. 5031
2600 GA Delft, The Netherlands
Fax: 31-15-623271

SCIENTIFIC COMPUTING and MATHEMATICAL MODELING

Date : 7-11 December 1992.

Location : Bangalore, India.

Sponsors :

— IMACS
— Eastern Ellinois University.

Organizers :

S.K. Dey (Chairman), K.S. Yajnik (Co-chairman), J.P. Ziebarth, E.J. Kansa, M. Toosi, B.K. Soni.

Invited speakers :

M. Witten, G. Sod, J. Steger, H. Yee, Ding Lee, L. Petzold, R. Mickens, D. Cox, E. J. Kansa, H.B. Keller, S. Mitra, J.K. Ghosh, Z.M. Warsi, B. Bernard, E. Rodin, N. Weatherill, J. Glazebrook.

Other information :

Send your abstract by August 31, 1991 to any one of the organizers in any area in scientific computing and/or mathematical modeling.

Contact address :

Prof. S.K. Dey
Department of Mathematics
Eastern Illinois Univ., Charleston, IL 61920
E-mail: Bitnet CFSKD@BOGECNVE
Internet CFSKD@UX1.CTS.EIU.EDU
Fax: 217-581-5188

International Conference on
SCIENTIFIC COMPUTATION and
DIFFERENTIAL EQUATIONS

The purpose of this conference is multifarious. First it is intended to be a continuation of the successful conferences held on the numerical solution of differential equations in Albuquerque, Toronto, London and Helsinki in 1986, 1988, 1989, and 1990, respectively. Secondly it is intended as a celebration of Professor John Butcher's sixtieth birthday and his outstanding contributions in the area of numerical methods for the solution of ordinary differential equations of initial value type. For these reasons the main thrust of the conference is in the area of differential equations. However, the third purpose of this conference is to bring together applied mathematicians in New Zealand and Australia who have a computational interest in the subject. Thus talks on any area of scientific computing are most welcome.

Date : 3-7 January, 1993.

Location : Auckland, New Zealand.

Topics :

The major theme of this conference is the ubiquitousness of the differential equation in Applied Mathematics and will focus in part on both modelling and computational aspects in this respect. Topics covered will include numerical methods for the solution of initial value and boundary value problems with or without algebraic constraints; delay differential equations, Volterra integral equations, applications to time-dependent partial differential equations and practical algorithms.

As well as these, we invite contributions in other areas of scientific computing, especially those which impinge either directly or indirectly on the field of differential equations. Examples of this include numerical quadrature, linear and nonlinear equations, extrapolation processes and simulation techniques. We particularly welcome talks which consider algorithmic developments in a parallel environment.

Other information :

Accomodation and the conference will be on campus, which is in the heart of Auckland city and only a few minutes walk from the blue waters of the Waitemata harbour. Auckland is a sophisticated modern city of nearly a million inhabitants, with a wide range of excellent restaurants and cultural activities. Auckland is especially interesting as a centre of polynesian culture. The city is situated between two beautiful harbours and there are many delightful trips available by boat and hydrofoil around the islands of the Hauraki Gulf. Within the range of a few minutes to a few hours to drive of Auckland there are extinct volcanic craters, golden sanded beachers, bubbling mudpools, verdant forests, and soaring mountains. For those who wish to extend their visit to New Zealand, a wide range of recreational opportunities exist. For example, both deep-sea and trout fishing grounds are easily accessible and there is a wide choice of accomodation options throughout the country.

January is midsummer in New Zealand and the weather should be warm and sunny with day-time temperatures in the range 23-28 degrees celsius.

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